CELILO FALLS TRAILS

(Final Report)

Lewis & Clark Trails and Indian Trails

Prepared for the National Park Service, Omaha, NB

by

Steve F. Russell

May 29, 2013, Rev: Oct 6, 2013

This report discusses the north and south portage routes, used by the Corps of Discovery, to portage around the historic Celilo Falls. It provides detailed discussions of the various issues, annotated maps, and annotated aerial photos. Most of the portage routes, the campsite of Oct 22-23, 1805, and other features of the falls are currently under water. Railroad and road construction appear to have obliterated most of the routes above water. Historic annual flooding may have washed out the river trails each year so that there may never have been a recognizable erosion trace over the portage routes.

Permission is granted for free use of this copyrighted works, both public and private. Please give credit for use of this research information in correspondence or publications.

(C) Copyright 2013, Steve F. Russell

SECTION 1.0 INTRODUCTION

This is a report of my examination of maps and photos for the historic trails in the Celilo Falls area of the Columbia River region between The Dalles, Oregon and Wishram, Washington. The goal was to identify any historic trails connected to the Lewis & Clark Expedition and/or historic Indian trails in the area of the falls, particularly the portage routes.

I first studied the maps and aerial photos provided by Ryan Cooper of the National Park Service (Omaha, NB) to get a good understanding of the available historical data and the region to be examined. Next, I studied the area using high-resolution MS Bing aerial photos and old photos available on the internet. The MS Bing aerial photos were examined down to the scale of 100 feet which is adequate to clearly see features of major trails still in use. I also read the Lewis and Clark journal accounts for the area.

Finally, I put key maps and photos into an MS Powerpoint file so I could align and scale the maps and photos to permit me to see these various sources overlap and correlate as much as practical. With this MS Powerpoint file, it is possible to switch from page to page and see the changes to the area over time and with different methods of presentation.

This report is the summary of my research efforts and findings.

SECTION 2.0 THE NATURE OF TRAILS

The concept of a trail seems simple but it is a very complex issue when viewed from a research perspective. This section deals with some of the issues associated with trail characteristics, use, and creation.

Trails are used by people and animals to travel from one location to another. I refer to this as a trail being “destination oriented.” Trails do not wander aimlessly through mountains and plain unless they are a somewhat modern recreation trail. Trails can be as short as a 100 yards when leading to a spring or they can be as long as the width of a continent, which happened when they were used by aboriginal people for migration. The longest trail I have extensively researched is the system of Indian trails used by the Corps of Discovery, under the command of Lewis and Clark, to travel from western Montana to eastern Washington, 1805-1806.

A trail is, more precisely, an erosion trace on the landscape caused by the travel of people and animals. The aboriginal people of North America and their dogs traveled extensively and great distances on trails but they treaded so lightly, and so many years ago, very little, or no, erosion trace remains. I cannot say I have ever seen an historic trail that was not worn by horses or large animals. However, many of these ancient trails were adopted for use in the northwest US when the horse arrived circa 1730. The later

erosion traces allow us to track ancient trails when their approximate location can be identified.

For the most part, the trails we see today were eroded by large animals such as horses, cattle, sheep, elk, deer, and western buffalo. Horses are ridden along trails that allow people to travel between desired destinations. Cattle and sheep have been driven along stock driveways to access pastures both in the low lands and in the mountains. Stock driveways were also used to take animals to market, mostly to railroad terminals in the early days.

Elk and deer have migration trails within their chosen range to access food and water. Western buffalo were killed to near extinction in the late 1800s but their trails were so extensive and deeply eroded that they can still be found in remote areas.

Agricultural and sport hunting activities can also have a significant impact on trail systems. Development of stocking watering stations in arid land will create a 'spoke-like' system of trails where cattle are traveling from grazing to water. Salt block feeding also has the same effect. In hunting, salt blocks deposited in remote areas can create a huge system of trails as elk and deer travel to them.

One characteristic that is common to many trails is that they do not have a singular erosion trace but a 'braid' of erosion traces. Some historic trails I have seen can have 2-5 erosion traces lying somewhat parallel to each other and be separated by no more than 50 feet. These traces also join and separate frequently, hence the word braid to describe them.

The soil type, fire history, flooding, and flat/sloping ground all have a major effect on the erosion trace. In rocky & thin soils, the trace may penetrate less than 3-6 inches, even on a major trail. In meadows and on loose-soil hillsides, the trace can be very deep. On steep ridges, I have seen trail erosion so deep that stirrups will drag when riding a horse on/in them. However, fire erosion and infrequent use can make a major trail disappear in only a decade when in a meadow or on a loose-soil hillside.

Trails along creeks and rivers have additional characteristics that sometimes makes them the hardest to follow and document. Often, they are used for up/down river travel or fishing access. There are usually two trails along a river; 1) a high-water trail and 2) a low-water trail. High water and flooding of the river may erase the low-water trail each year. Historically, on some rivers such as the Snake River above Lewiston, Idaho, the flood stage could reach high-water trails and aboriginal village sites. Today, dams have eliminated these large water-level variations. Of course trails along rivers can also be livestock driveways and migration trails for large game animals. The flood history of a river is essential to the research of historic trails along it. Answers to questions such as: 1) what portion of the trails are above historic flood levels? and 2) when was the last major flood before dams impounded the water, are essential to the research.

SECTION 3.0 APPLICABLE COMMENTS FROM THE JOURNALS

Reference: http://lewisandclarkjournals.unl.edu/ Oct 22-23, 1805

Clark:

OCT 22: They observed Celilo Falls and decided that the best portage for the baggage and all articles, except the canoes, was on the north side. They took their baggage [and supplies] and formed a camp below the rapids on the north side. The portage distance was 1200 yards, 400 yards over rock and about 200 yards over loose sand collected in a ravine.

At the upper end of the portage, they passed 17 lodges and at the lower end, 5 lodges. They hired the Indians to take their heavy articles on horses across the north-side portage. The Indians bury their dead in 'tombs' on an island in the rapids. They are a war with the Snake Indians on the south side of the river and are afraid to venture to the south side.

An examination of the south side of the river showed they could take the canoes down a narrow channel after a short portage at the head of the falls so all canoes took the south-side portage and then were paddled to the campsite on the north side.

OCT 23: Clark and a greater part of the men crossed the Columbia in the Canoes to the south side, above the falls, and hauled them across a portage of 457 yards. They then descended through a narrow channel of about 150 yards wide. Here, the channel is divided by 2 large rocks where they were obliged to let the canoes down by strong ropes of Elk skin. One canoe got loose by the cords breaking, and was caught by the Indians below. They landed safely with all the canoes at their Camp on the northwest side of falls by 3 o'clock P. M.

Lewis: Lewis did not have a journal entry for Oct 22-23, 1805.

Whitehouse:

OCT 22: A continual mist rises from the 'first falls' of the Columbia (Celilo Falls). They made a portage of 3/4 mile [a little over 1200 yards] on the north side. They carried the baggage by land on their backs and hired a few heavy horse loads by the natives. They camped on the north side at a large river eddy. They measured the falls to be 37 feet 8 inches high. The perpendicular height of the cliffs where they camped were estimated to be about 250 feet high.

OCT 23: They all went with Capt. Clark and took the canoes across the river, then hauled them round a perpendicular pitch of 21 feet. They hauled all the canoes round the high rocks about a quarter of a mile then put them in the water again. The natives

use this portage for their canoes. These falls is called the Grand falls of Columbia River

Ordway:

OCT 22: The officers viewed the falls and found that they had a portage of about ¾ of a mile, on the north side. They carried the baggage past the portage and hired some horses from the natives for the heavy baggage. The got all except the canoes below the falls and camped close under a high range of cliffs. There was a very large river eddy where they camped.

OCT 23: About 8 o'clock Capt. Clark went with the most of the party and took all the canoes across the River and hauled them about a quarter of a mile over the rocks past a perpendicular fall of 22 feet and put them in a very rapid channel below. This portage has been used by the natives taking their small canoes round and close below the great falls is a large fishery in the spring of the year. We got the canoes all in the channel below the big fall Then, the best Swimmers went on board and took them through the whorl pools a little more than half a mile. Then came to two more pitches of about three feet each. we let the canoes down by ropes. One of them broke loose from us and went over safely and was taken up by the natives below. Towards evening we got the canoes all safe down to camp without damage.

Gass:

OCT 22: They came to the first falls or great rapids and had 1300 yards of portage over band ground. They are not yet certain whether they can take their canoes by water.

OCT 23: At 9 o'clock in the forenoon all hands, but three left to keep camp, went up and took the canoes over to the south side; as the natives said that was the best side of the river to take them down. Here we had to drag them 450 yards round the first pitch which is 20 feet perpendicular. We then put them into the water and let them down the rest of the way by cords. The whole height of the falls is 37 feet 8 inches, in a distance of 1200 yards. In the evening we got all our canoes safely down to the encampment on the north side.

The high water mark below the falls is 48 feet, and above only 10 feet 4 inches from the surface of the water: so that in high water there is nothing but a rapid, and the salmon can pass up without difficulty. The reason of this rise in the water below the falls is, that for three miles down, the river is so confined by rocks (being not more that 70 yards wide) that it cannot discharge the water, as fast as it comes over the falls, until what is deficient in breadth is made up in depth.

SECTION 3.0 FIGURES OF MAPS AND AERIAL PHOTOS

As much as possible, the figures are scaled and aligned so that their features overlap and can be examined in detail by switching from slide to slide within this Powerpoint file. It is a technique I frequently use to compare images from different dates and sources.

Figure 1 - The codex map (Great Falls of the Columbia River, No. 1, October 22-23, 1805, Codex H, Page 1) gives good details in spite of orientation and scale distortions when compared to modern maps. I used this map to cross check against the 1935 aerial photo map and was able to correlate enough of the Figure 4 reference points to identify portage routes and the major rock formations with reasonable, but not perfect, agreement. The Codex H map clearly portrays where the Wishram villages are located and the rock formations as they appeared at that time. I also used the Voorhis No. 4 map to compare the formations to the Codex H map. The reference points, used throughout this report, were developed using Figure 4, are given in the discussion for Figure 4.

Figure 2 - Atlas map 86 is quite distorted but it does show the major features of the falls and I was able to correlate reference points. This map is interesting in that it shows the complete route of the south-side portage, including the water route all the way to the north-side campsite. The campsite, north-side portage, and Indian village sites are all clearly identifiable when compared to the 1935 aerial photo.

Figure 3 - This is the 1935 aerial photo provided by Ryan Cooper of the National Park Service in Omaha and it includes his reference point numbers. I have included it in this report for comparison purposes and for use in telephone discussions.

Figure 4 - 1935 aerial photo. This photo is the ‘gold standard’ for understanding the precise geography of area at the earliest possible/practical time. It is our best data concerning the nature of the falls and river banks before they were covered with water by The Dalles Dam. I used it to place my estimation of the trail locations and used it’s reference points to registrate locations in other images and maps. When I compare this photo with some of the ground photos taken in the early 1900s, there is some confusion as to the location of the fishing points and the effect that dynamite blasting for the railroad bridge had on the features of the falls. I had two candidate positions for the north-side portage trail but I believe the route of the red dotted line is the most likely and practical. The choice depends on the safety of the landing area on the north river bank and I have been unable to determine that. The journals describe the north-side portage route over rock and sand. I took that into account in placing the trail. The rock formations in 1935 do not seem to exactly correlate to rock formations from other photos and maps. I am still puzzling out that issue.

The red numbered reference points in the photo are described as follows:

1. Possible alternate landing point for the north-side portage of all equipment and supplies but not the canoes. This point has to be considered but is second to point #2 in probability.
2. This is the most probable landing point for the north-side portage given the distance from the camp and the journal description of walking on rock for 400 yards before walking on sand.
3. The part of the portage that was on solid rock (400 yards).
4. The part of the portage that was on sand (800 yards).
5. The location of the campsite for Oct 22 & 23, 1805.
6. The landing point for the south-side portage of the canoes minus equipment and supplies.
7. The point were the canoes were put back into the water below the main falls.
8. The canoes hugged the south bank of the river,
9. The canoes were taken down a small falls (3 feet?). One of the canoes got loose from the men but the Indians recovered it undamaged. The canoes were taken north, across the river, to the campsite.
10. A small encampment of Indians.
11. Reference point on the river for location the larger encampment of Indians.
12. The site of the main encampment of Indians. It is now part of the town of Wishram.
13. The easternmost part of the main Celilo Falls.
14. The westernmost part of the main Celilo Falls.
15. The large rock shown on the journal maps. The Indians buried some of their dead on this large rock.
16. One of three large rock formations in the river channel that can be correlated between old and new maps.
17. See #16.
18. See #16.
19. Part of the huge rock formation that can be correlated between old and new maps.
20. One of the channels through the rock dam that can be correlated between old and new maps.
21. A deep, narrow canyon in the rock formation created by a long fracture of the rock. This can be correlated between old and new maps.
22. A large sand bar shown in both old and new photos.

Figure 5 - Aerial Photo showing estimated excursion limits on the portage route (analogous to error bars in scientific data). The actual portage route could be anywhere within the ‘error bar’ region. Likewise, the campsite location could also vary within these excursion limits.

Figure 6 - This is the modern topo map for the area after the dam flooded the falls. It has the features from Figure 4 superimposed for comparison.

Figure 7 - This high-resolution aerial photo from MS Bing shows the area as it looks today. I recommend going to the MS Bing website and examining the area at a resolution of 100 ft or 250 ft. There is amazing detail north of the river showing many cow paths and other interesting features. Concerning the powerline tower, I see access roads and many cow trails but not a definite historic trail. It would take on-the-ground examination to see if one exists

SECTION 4.0 SUMMARY AND CONCLUSIONS

NORTH-SIDE PORTAGE (1200 yards)

The original north-side portage route has trails established in modern times that are the result of river use for recreation and cattle. The route has also been severely affected by the construction of the railroad and by road building and what appears to be a hillside gravel source. In my opinion, it is doubtful if any significant original tread can be found for the north-side portage route.

SOUTH-SIDE PORTAGE

The south-side portage is shown clearly on Atlas Map 86. It is entirely under water now and the building of the canal and other construction seems to have further wiped out any evidence of it.

HIGH-WATER MARK

Gass reported that the high-water mark below the falls was 48 feet and the high-water mark above the falls was 10 feet. He says the falls were just a rapid at high water. With this information, we know that high water covered the rocks in the channel around the falls. It probably washed away the burials each year. I estimate that the water level at high flood stage was about 25 feet below the current level of the river behind the Dalles Dam.

RAILROAD CONSTRUCTION

Besides the obvious bridge building and track laying, it is difficult to know the exact impact that the railroad has had on the falls. Dynamite blasting for construction is common. There may also have been blasting to change some of the channel features in the falls to better protect the railroad during high water. This makes it more difficult to compare channel and rock features between 1805-06 and 1935.

INDIAN TRAILS FROM THE NORTH

My opinion is that the Indian trails from the plateaus to the north of the river came down the side hills in the same locations that cattle trails now come down. The most likely route northward was from the falls to Wishram, Wishram Heights, and then the ridges to the north. I need to do much more research to determine if I can actually find an historic trail. The numerous cattle trails to water and salt sources make the task difficult.

FINAL SUMMARY

Concerning the power tower area and the portage areas, it is my opinion that there are no cultural resource values associated with Lewis & Clark that are in need of protection. They are either under water or have been destroyed by railroad construction, road construction, and recreation. Additionally, I don't believe the power tower area every had any Lewis & Clark activity. Concerning the Indian trails from the falls to the north plateaus, there are so many cow trails that it would require extensive research to discern an historic trail in the mix. If old maps and journals of the area could be found, I may be able to puzzle it out. As to Indian trails in the power tower area, It would require field work to distinguish them from cow trails and the access roads and jeep trails.

The photos and maps associated with this report are located on subsequent pages. An MS Powerpoint file is provided with this report so features can be compared among the various map and photo sources. A file of the entire report in Adobe PDF format is also provided.

Figure 1. codexh_2634.jpg

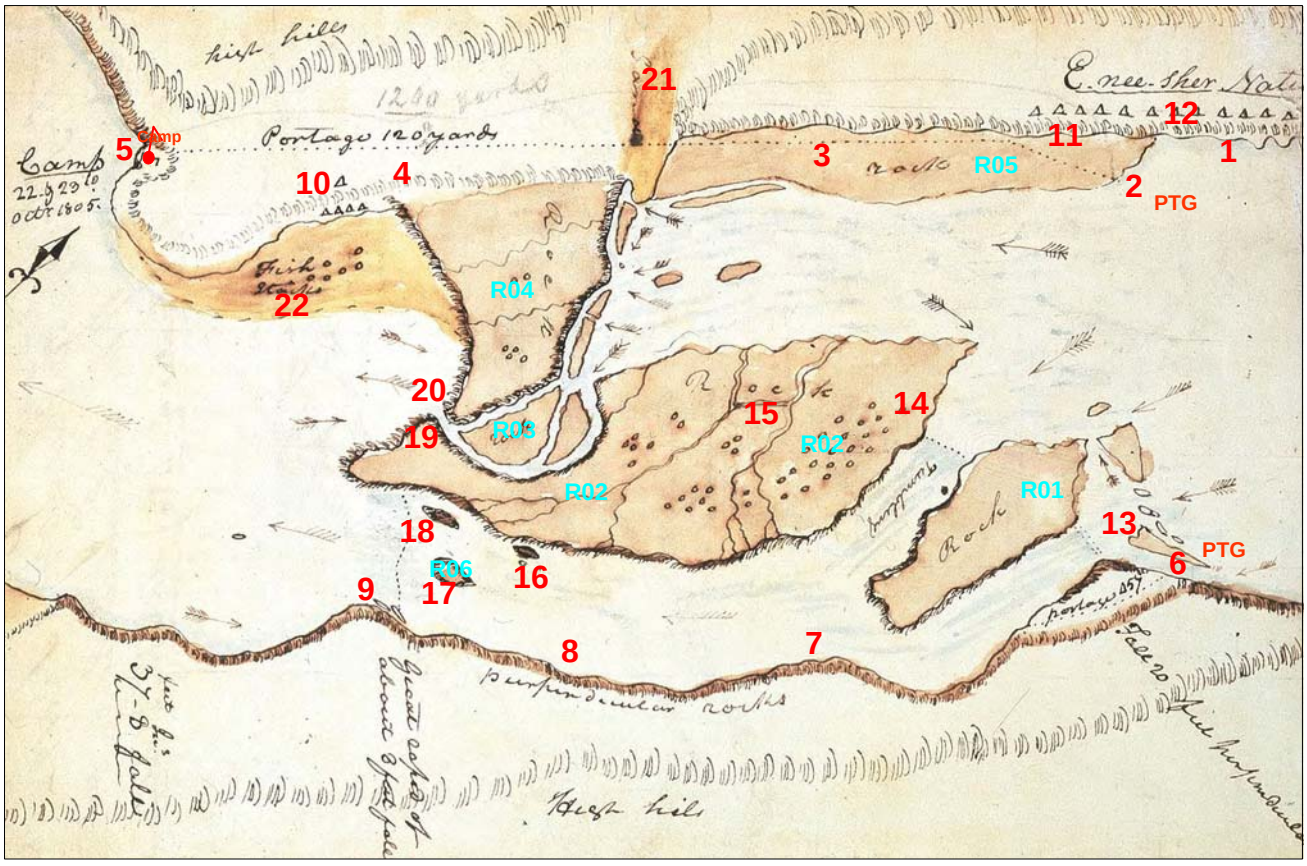

Figure 2. atlas_map86_numbers

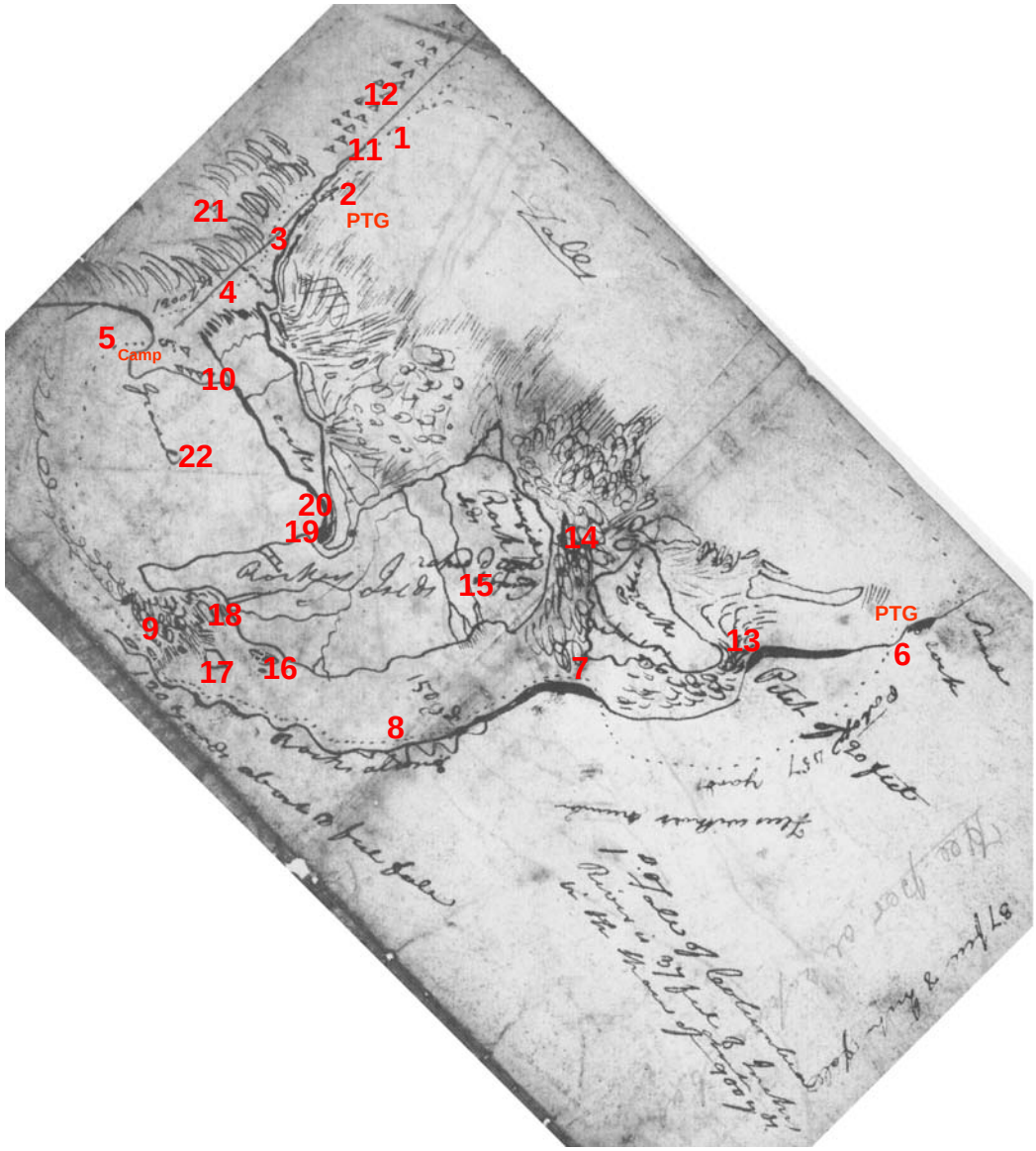

Figure 3. 1935 Aerial Photo with rock labels

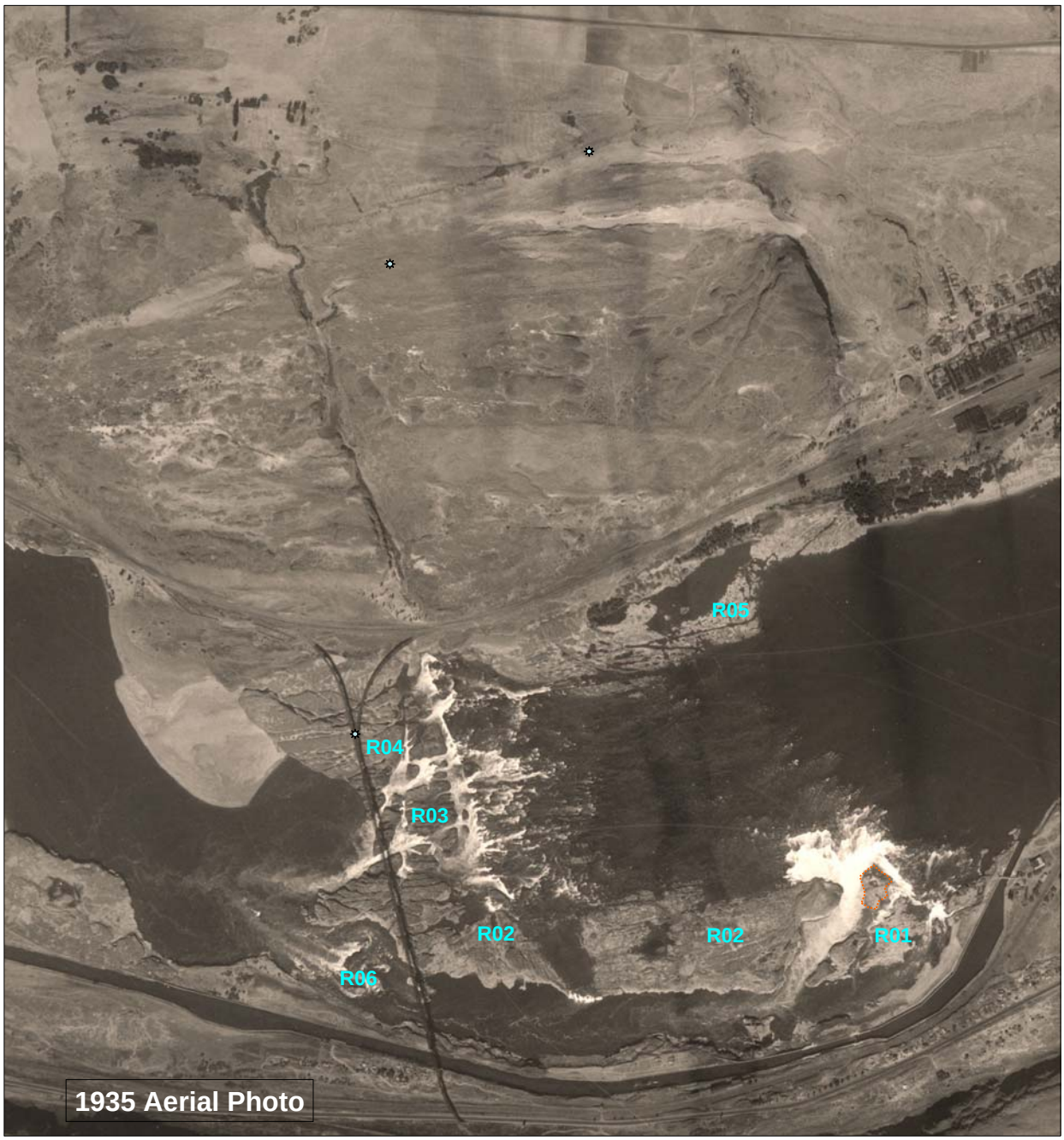

Figure 4. 1935 Aerial Photo with rock labels (lt. blue), reference point numbers (red), portage routes (dotted red), and rock outlines (orange).

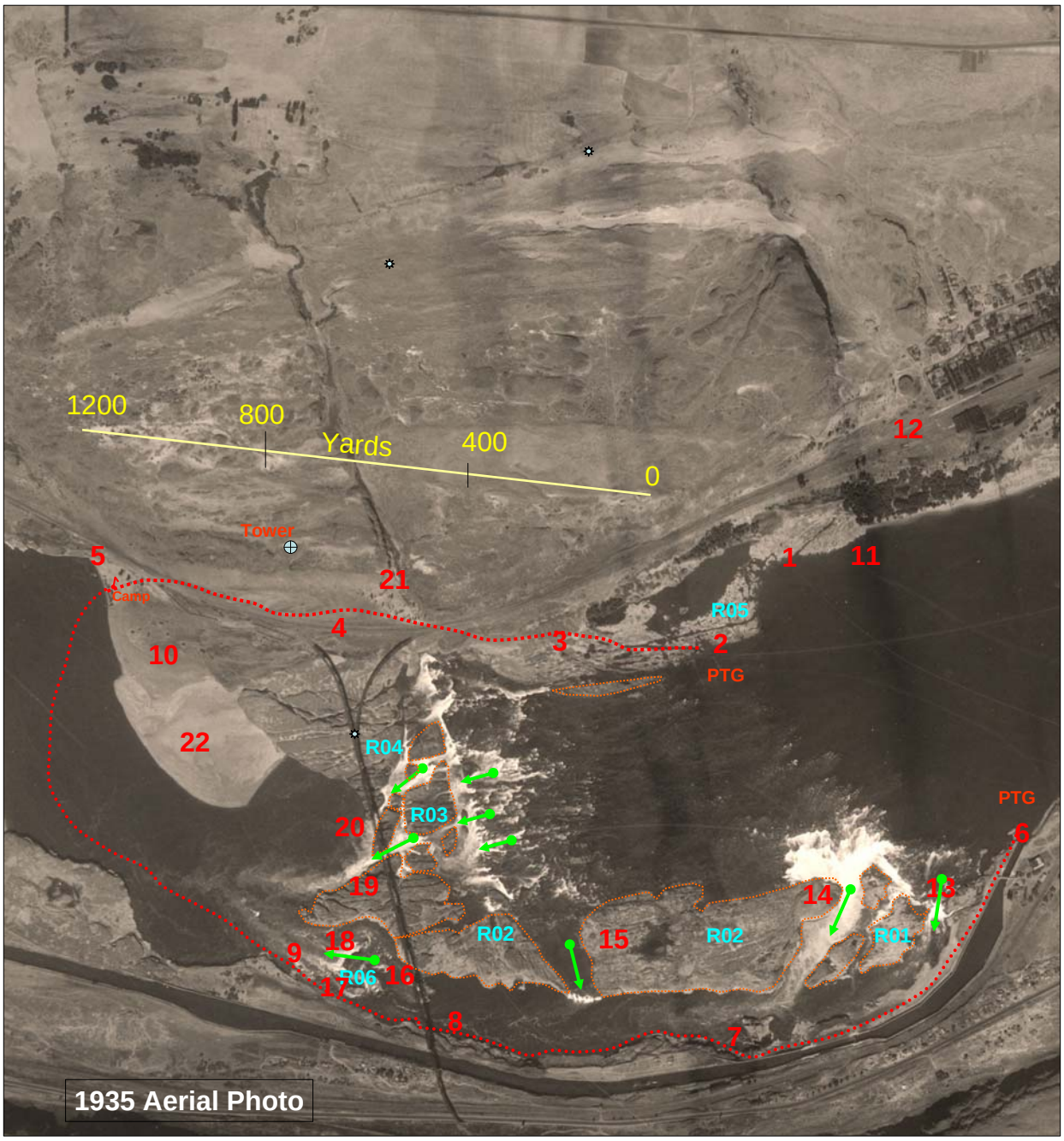

Figure 5. 1935 Aerial Photo showing estimated excursion limits on the portage route (analogous to error bars in scientific data).

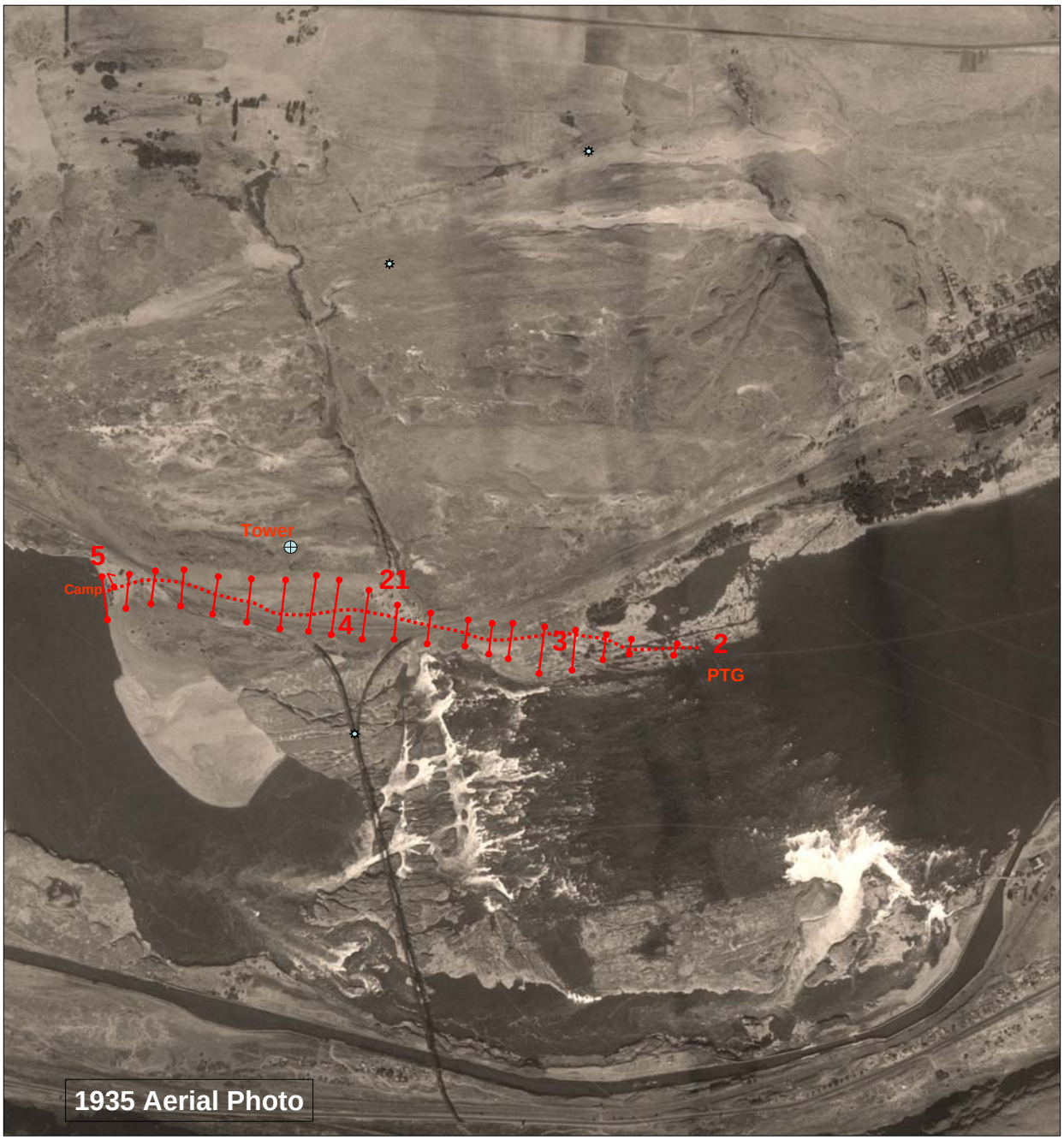

Figure 6. Topographic map of Wishram area

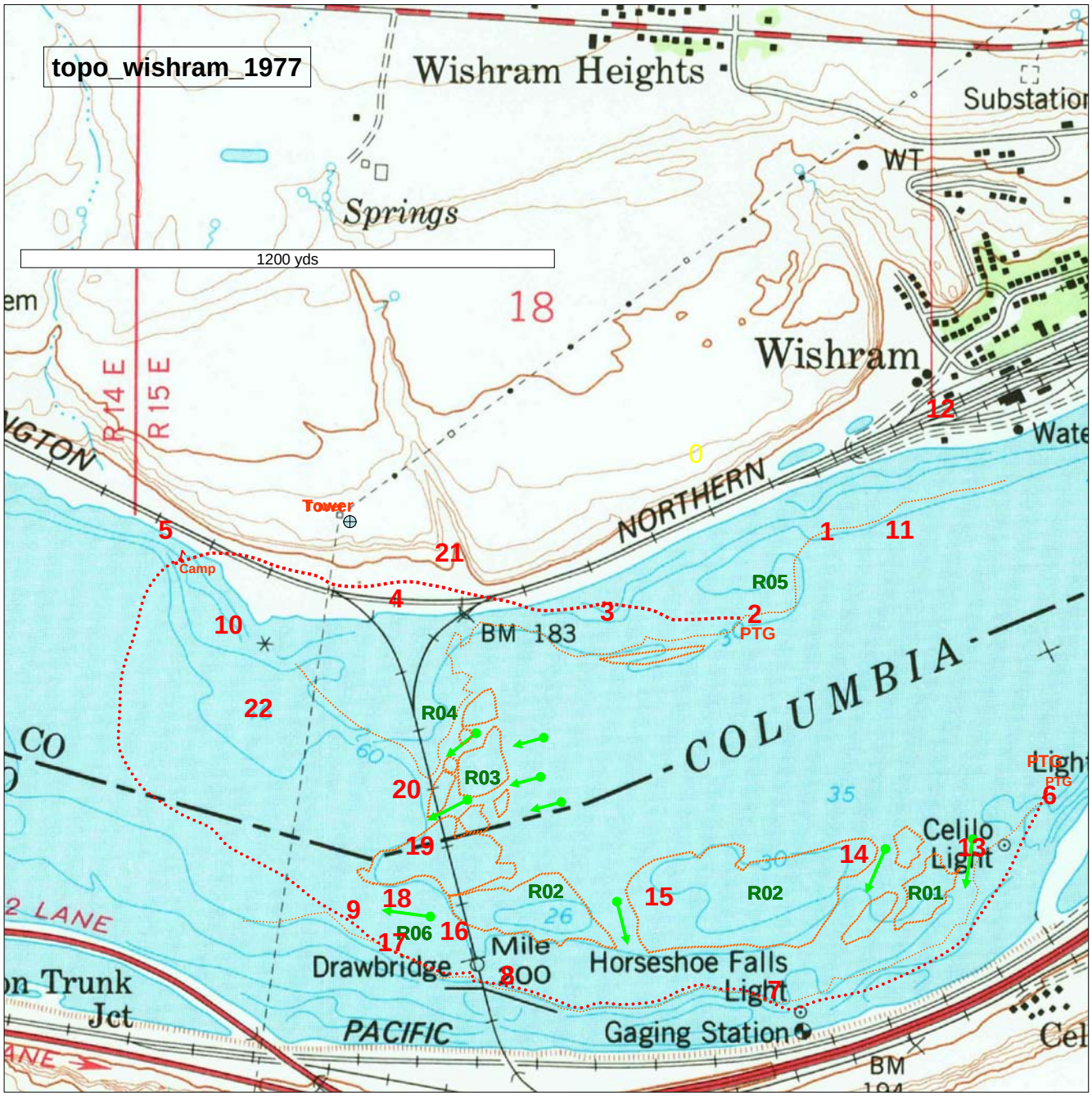

Figure 7. 2013 MS Bing Aerial Photo of Wishram area